

Cadiz Valley Groundwater Basin

- Groundwater Basin Number: 7-7
- County: San Bernardino and San Bernardino
- Surface Area: 271,000 acres (423 square miles)

Basin Boundaries and Hydrology

This basin underlies Cadiz Valley in eastern San Bernardino County. It is bounded by nonwater-bearing rocks of the Callumet Mountains on the west, of the Ship Mountains on the north, of the Old Woman, Iron, and Granite Mountains and Kilbeck Hills on the east, and of the Coxcomb Mountains on the south. Short segments of surface water and groundwater divides also compose parts of the northern, eastern, and southern boundaries. Cadiz Valley drains internally toward Cadiz (dry) Lake. Average annual precipitation ranges from 4 to 6 inches.

Hydrogeologic Information

In this part of the Mojave Desert, both an upper and a lower alluvial aquifer have been identified. The upper aquifer consists of Quaternary age sands and gravels that reach 600 feet thick (DWR 1967; MWD 1999; 2000). The lower aquifer consists of middle to late Tertiary age alluvial deposits that contain a higher proportion of fine material and are generally less permeable than those of the upper aquifer (MWD 2000). The thickness of the lower alluvial aquifer may reach 1,800 feet near the town of Danby (MWD 2000). These aquifers are separated in places by discontinuous layers of silt and clay; however, both aquifers are presumably unconfined (MWD 1999). Wells in the Cadiz Valley Groundwater Basin yield as much as 167 gpm (DWR 1975); however, wells in the Fenner Gap area of the adjacent Bristol Valley Groundwater Basin completed in the same aquifers yield 1,000 to 3,000 gpm (MWD 1999).

Restrictive Structures

Cadiz Valley is underlain by two major northwest trending faults (MWD 1999). This fault zone has a strike length of at least 25 miles and may merge to the north and northwest with extensions of the Bristol-Granite Mountains and South Bristol Mountains fault zones (MWD 1999). It is unknown whether or not these faults are boundaries to groundwater flow.

Recharge Areas

Natural recharge is dominantly from percolation of surface runoff through stream beds and washes. A conjunctive use project is proposed that would recharge the basin with Colorado River water at Fenner Gap during wet years and extract it down gradient during drought years (MWD 1999; 2000).

Groundwater Level Trends

A hydrograph for a well in the northern part of the basin shows that water levels fluctuated less than one foot during 1993 through 1995 (Geoscience 2001). A hydrograph for a well near Archer Station in the northeastern part of the basin shows steady water levels during 1979 through 1984. Surface

water and groundwater flow is from the edges of the basin toward Cadiz Lake (MWD 1999).

Groundwater Storage

Groundwater Storage Capacity. The total groundwater storage capacity is estimated to be 4,300,000 af (DWR 1975).

Groundwater in Storage. Unknown.

Groundwater Budget (Type C)

Natural recharge is estimated at about 800 af/yr (DWR 1975). Extractions in 1952 totaled about 1 af (DWR 1975).

Groundwater Quality

Characterization. Water from a well in the northern part of the basin has sodium-calcium bicarbonate character (Geoscience 2001); whereas water from a well near Archer Station has sodium chloride-bicarbonate-sulfate character (DWR 1967). TDS concentrations average about 300 to 400 mg/L, except near Cadiz Lake where concentrations exceed 3,000 mg/L (MWD 1999).

Impairments. Near Cadiz Lake, TDS concentrations exceed drinking water standards (MWD 1999).

Well Characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range: to 167 gal/min	Average: 66 gal/min (DWR 1975)
Total depths (ft)		
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
Department of Health Services and cooperators	Groundwater levels	
	Miscellaneous water quality	
	Title 22 water quality	

Basin Management

Groundwater management:

Water agencies

Public

Private

References Cited

- California Department of Water Resources (DWR). 1967. Water Wells and Springs in Bristol, Broadwell, Cadiz, Danby and Lavic Valleys and Vicinity, San Bernardino and Riverside Counties, California. Bulletin No. 91-14.
- Geoscience Support Services, Inc. 2001. Fourth Annual Monitoring Report, January 2000-December 2000. Cadiz Valley Agricultural Development. Prepared for Cadiz, Inc.
- Metropolitan Water District of Southern California (MWD). 1999. Cadiz Groundwater Storage and Dry-Year Supply Program: Draft Environmental Impact Report, Draft Environmental Impact Statement, SCH. No 99021039. MWD Report No. 1157.
- _____. 2000. Supplement to the Cadiz Groundwater Storage and Dry-Year Supply Program: Draft Environmental Impact Report, Draft Environmental Impact Statement, SCH. No 99021039. MWD Report No. 1169.

Errata

Changes made to the basin description will be noted here.